$E = mc^2$

The Department of Natural Resources and Conservation (DNRC), the Montana Power Company, the Department of Commerce–Board of Investments, and the Office of Public Instruction have formed a public/private partnership to provide up-front cash to identify and install energy and money-saving improvements in Montana school buildings. The improvements can range from installing energy-efficient lights to replacing a boiler.

The program funded by the partnership is referred to as $E = mc^2$, which stands for **EFFICIENCY = managing costs carefully**. Following are the five main elements of the $E = mc^2$ program.

ENERGY USE EVALUATION

An Energy Use Evaluation is a first look at school facilities to determine whether there is significant potential for saving energy. The Energy Use Evaluation, which costs an average of $100 to $300 for a single building, will be provided free of charge for the school.

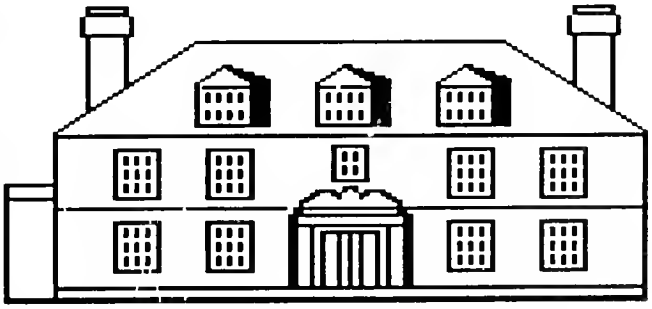
REVIEW OF ENERGY USE EVALUATION

When the Energy Use Evaluation is complete, DNRC engineers review it and determine whether the facility warrants a full-scale engineering analysis, referred to as a Technical Assistance (TA) Study. DNRC will not recommend doing a study on a building if the potential savings are not sufficient to justify the cost.

If potential energy and cost savings are not sufficient to justify the costs of performing a full-scale TA study, but are sufficient to qualify for an energy-efficient lighting retrofit, a reduced analysis will be recommended and the cost covered by a DNRC grant.

Building evaluations that indicate minimal electrical savings may be eligible for utility rebates for more efficient lighting.

TECHNICAL ASSISTANCE STUDY



If the Energy Use Evaluation indicates a good potential for saving energy, the next step is a Technical Assistance Study. This study is a comprehensive analysis that provides in-depth information on a building's energy use and recommendations for energy conservation projects. The Technical Assistance Study must be performed by an engineering firm or an architect/engineer team certified by DNRC.

A Technical Assistance Study can cost $1,500 or more, depending on the square footage of the building. The cost of doing a Technical Assistance Study will be awarded to the building owner as a grant under the Institutional Conservation Program.

The school board must provide DNRC with a resolution stating that all cost-effective projects identified in the analysis will be completed. The resolution is not a legally binding document; it is just a good-faith commitment so that the TA Study can be performed with the understanding that the cost-effective projects identified will be implemented.

REVIEW OF TECHNICAL ASSISTANCE STUDY

DNRC engineers will review the completed TA Study to assess technical accuracy and verify which projects will yield savings in excess of costs. The projects will be prioritized and recommended for completion.

FUNDING PACKAGE

DNRC will develop an individual funding package for the potential retrofits identified in the Technical Assistance Study. The funding package will be designed to include any utility rebates and any other funds that may be available in order to minimize the amount that needs to be paid back. Money can be loaned for projects with a payback up to five years. The intent is for the loan to be repaid by the school's energy cost savings.

Performance contracts with private energy service companies can be included in this program to guarantee the school's energy cost savings. Private energy service companies are available to implement energy conservation projects that include HVAC controls, lighting, and insulation.

The coordinated efforts of DNRC, utilities, and the Board of Investments will minimize administrative burdens placed on the school.

If you would like to begin the $E = mc^2$ program and have an Energy Use Evaluation performed on one or all of your buildings, please contact Connie Onstad at DNRC's Energy Division, 1520 East Sixth Avenue, P.O. Box 202301, Helena, MT 59620-2301, phone 444-6777.

EXAMPLES OF ENERGY CONSERVATION PROJECTS

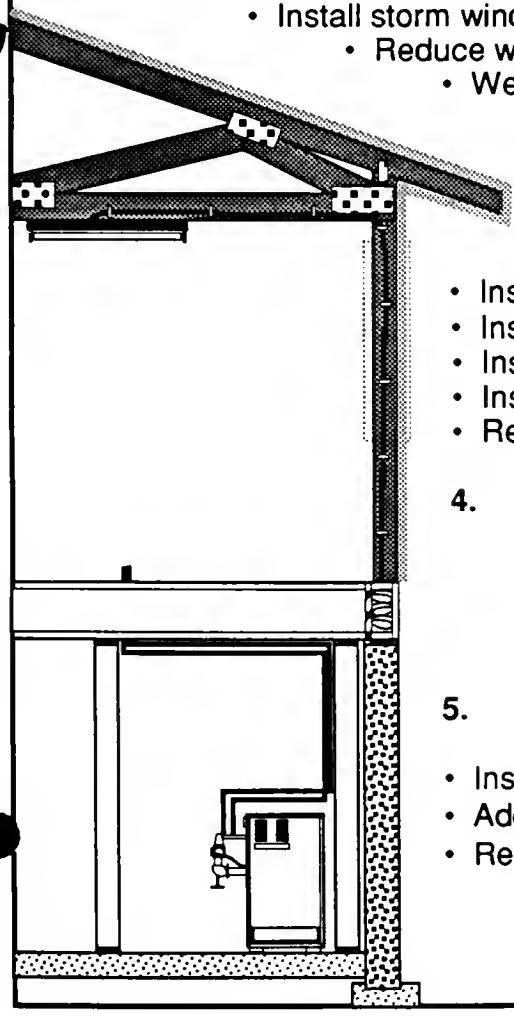
Following are examples of energy conservation projects that have been completed in Montana schools and hospitals.

1. Heating Systems

- Install efficient burners and replace controls
- Replace inefficient boilers
- Add a small boiler for summer/spring/fall operation
- Convert to less expensive fuels such as coal and geothermal
- Insulate pipes and duct work
- Reclaim heat from exhaust (ventilation and combustion)
- Convert to more efficient air systems such as variable air volume
- Control ventilation air more efficiently
- Establish automatic controls for occupied/unoccupied rooms
- Replace inefficient steam traps
- Install heating system controls for milder weather (fall, spring)

2. Building Envelope Systems

- Insulate walls, roofs, and foundations
- Install storm windows
- Reduce window area
- Weatherstrip windows and doors



3. Lighting Systems

- Convert from incandescent to fluorescent or high intensity discharge lamps
- Install photoelectric controls
- Install occupancy sensors
- Install electronic ballasts
- Install compact fluorescent lights
- Retrofit exit lights to be more efficient

4. Domestic Hot Water Systems

- Insulate tanks and pipes
- Install in-line heaters
- Install recirculating pump time clocks

5. Other Systems

- Install swimming pool covers
- Add economy cooling measures
- Replace inefficient electric motors